



# Heavy/Medium Duty Fleet Conference

August 9, 2005  
Indianapolis, IN

Tom Verry

National Biodiesel Board

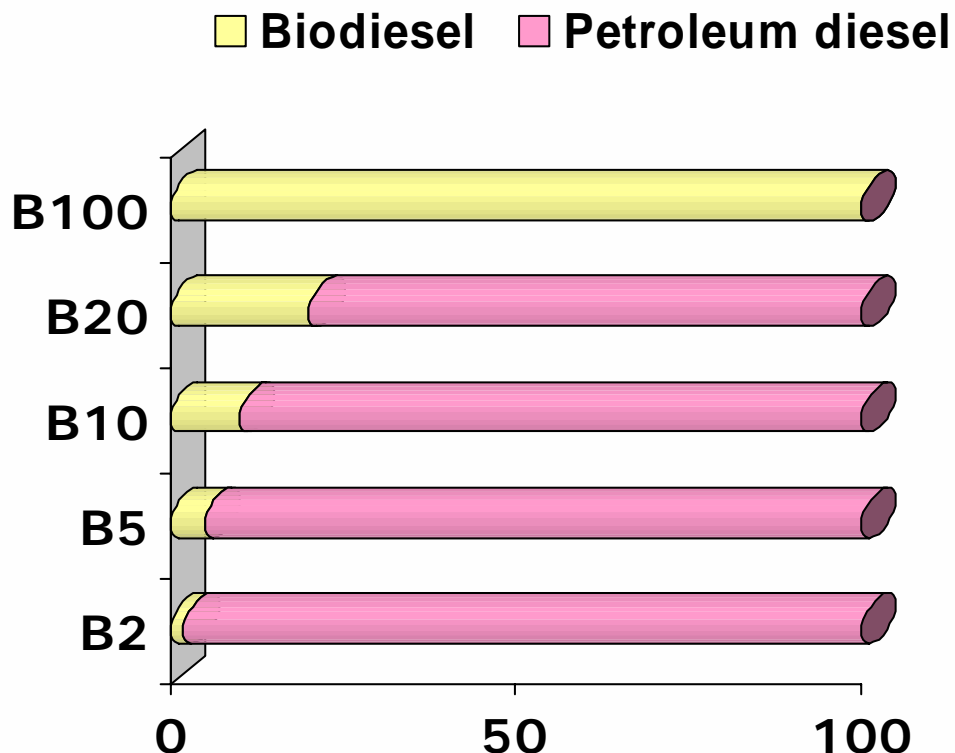


# Biodiesel Defined

- Biodiesel, n. -- a fuel comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats, designated B100, and meeting the requirements of ASTM D 6751.
- If the fuel does not meet ASTM D6751 spec it is not biodiesel.



## Biodiesel Blends



**B100** = 100% biodiesel

**B20** = 20% biodiesel + 80% petroleum diesel

**B10** = 10% biodiesel + 90% petroleum diesel

**B5** = 5% biodiesel + 95% petroleum diesel

**B2** = 2% biodiesel + 98% petroleum diesel



# BQ 9000 Accreditation Mark



# Biodiesel Production



100 lbs. of vegetable oil  
or fat

+

10 lbs. methanol

=

100 lbs. biodiesel  
(B100)

+

10 lbs. of glycerin





# Biodiesel Performance

- Integrates into existing petroleum infrastructure
- High Cetane (>50 vs 42)
- High Lubricity (> 6000g vs 3100g SLBOCLE)
  - ◆ 2% blend biodiesel increases lubricity by up to
- BTU Content (120,000 BTU/gal vs 126,000)
- Cold Flow (3-8° F > for soy-based B20)
- Flash Point (a minimum 260° F vs 150°)



**BIODIESEL RETURNS ENVIRONMENTAL BENEFITS WITHOUT SACRIFICING OPERATING PERFORMANCE**





# Emissions with Biodiesel Blends



## Emission Type

Total Unburned Hydrocarbons

**B100**

-67%

**B20**

-20%

**B2**

-2.2%

Carbon Monoxide

-48%

-12%

-1.3%

Particulate Matter

-47%

-12%

-1.3%

Oxides of Nitrogen (NO<sub>x</sub>)

+10%

+ 2%

+0.2%





# Environmental & Energy Benefits Security

- Biodiesel Helps to Preserve and Protect Natural Resources
  - ◆ Energy Balance – 3.24 to 1.0 (USDA/DOE)
  - ◆ Biodegradable and Non-Toxic - Safer than salt and biodegrades as fast as sugar (USDA)
  - ◆ Approximately an 80% reduction in greenhouse gas emissions according to a study conducted by USDA and DOE.





# B20 Use in Cold Temps?

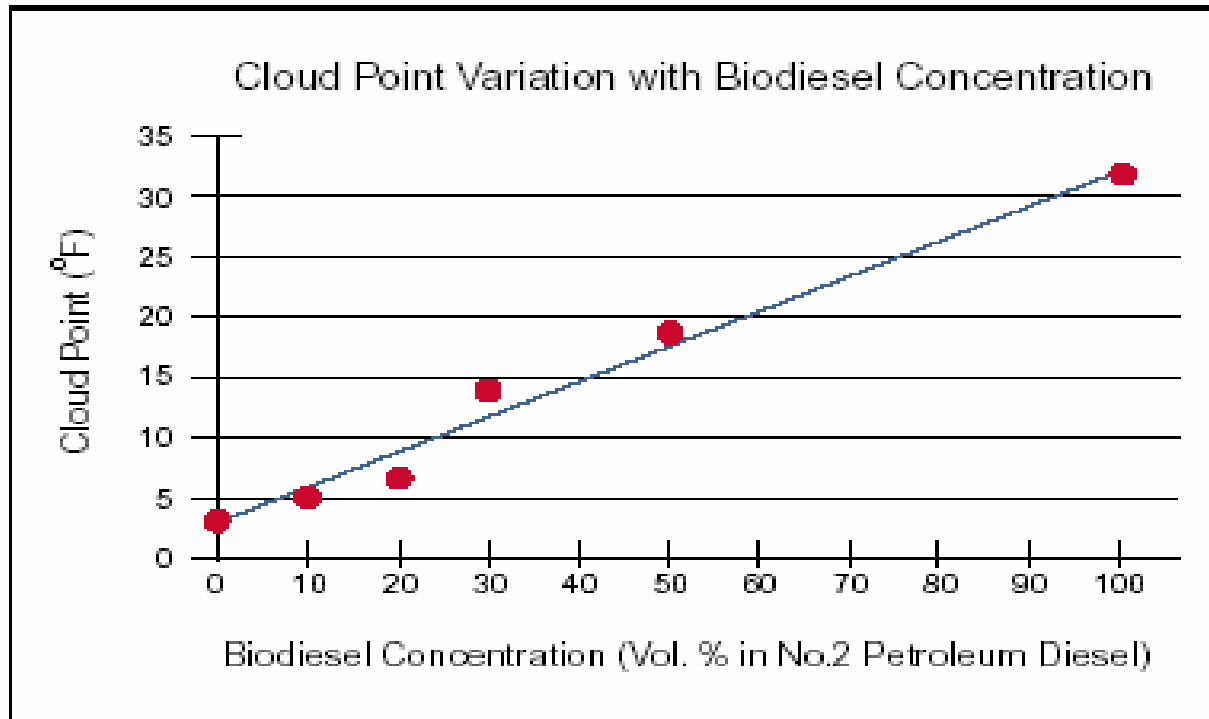
- ◆ Lou Summerfield, Glacier National Park (MT)
- ◆ B20 used in 60+ vehicles/equipment year around
- ◆ 8000+ gallons of B20 consumed in 2004
- ◆ Used in temps down to -35 F



## Cold Weather Properties

| % Biodiesel | Cloud Point |
|-------------|-------------|
| 0           | 3           |
| 10          | 5           |
| 20          | 7           |
| 50          | 18          |
| 100         | 32          |

Data shown for virgin soy oil blended with #2 diesel. Data varies between charts due to data coming from two different studies.





# Biodiesel Position with OEM's

## ➤ Engine Warrantees:

- ◆ Parts and Workmanship
- ◆ OEM's Don't Make Fuel
- ◆ OEM's Don't Warrantee Fuel
- ◆ As with diesel--problems caused by the fuel are the responsibility of the fuel supplier



# Biodiesel Position with OEM's

## ➤ OEM's:

- ◆ B100 Must Meet ASTM D 6751
- ◆ Most OEM Fully Support B5
- ◆ B20 and higher blend support varies:
  - Legally B20 won't void warranty
  - Problems caused by the fuel are the responsibility of the fuel supplier
  - Want to see additional experience in the field
- ◆ See NBB web site for specifics





# Warranty Statements

Caterpillar

Cummins

Detroit Diesel

International

John Deere



[http://www.biodiesel.org/resources/fuelsheets/standards\\_and\\_warranties.shtm](http://www.biodiesel.org/resources/fuelsheets/standards_and_warranties.shtm)



# Increasing OEM Support

- Diesel powered Jeep Liberty to have fill of B5
- John Deere North America will have B2 factory fill



# Fuel Filters and Solvency

## B100

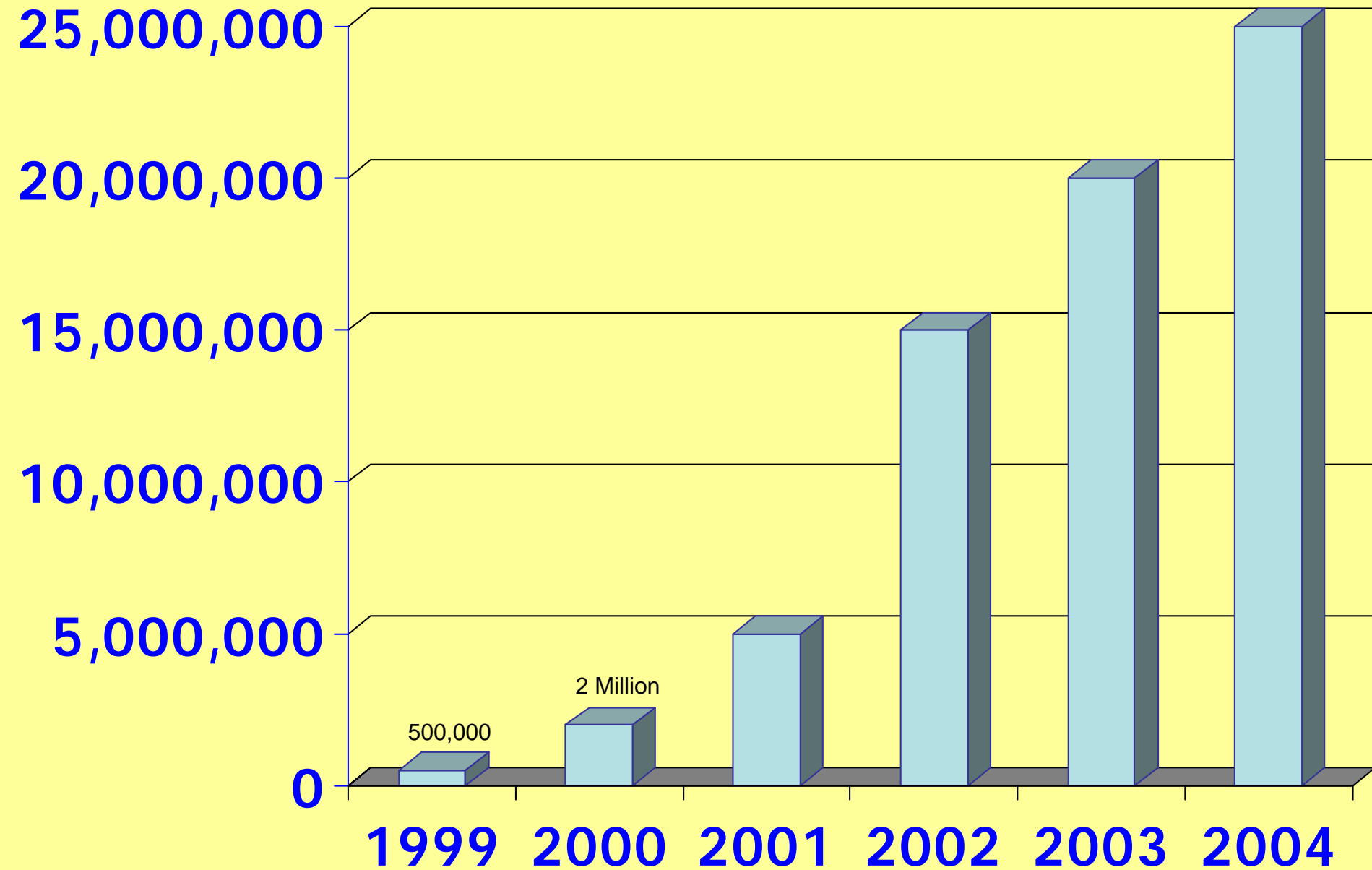
- Monitor filters closely
- Strong Cleaning Effect
- Wipe painted surfaces immediately.
- Storage tanks may need to be cleaned, or keep extra filters on hand on start up

## B20

- Monitor filters, less than 5% need to be changed
- Mild Cleaning Effect
- Storage tanks may need to be cleaned, or keep extra filters on hand on start up.
- Housekeeping protocols for generic diesel equally important prior to blending.



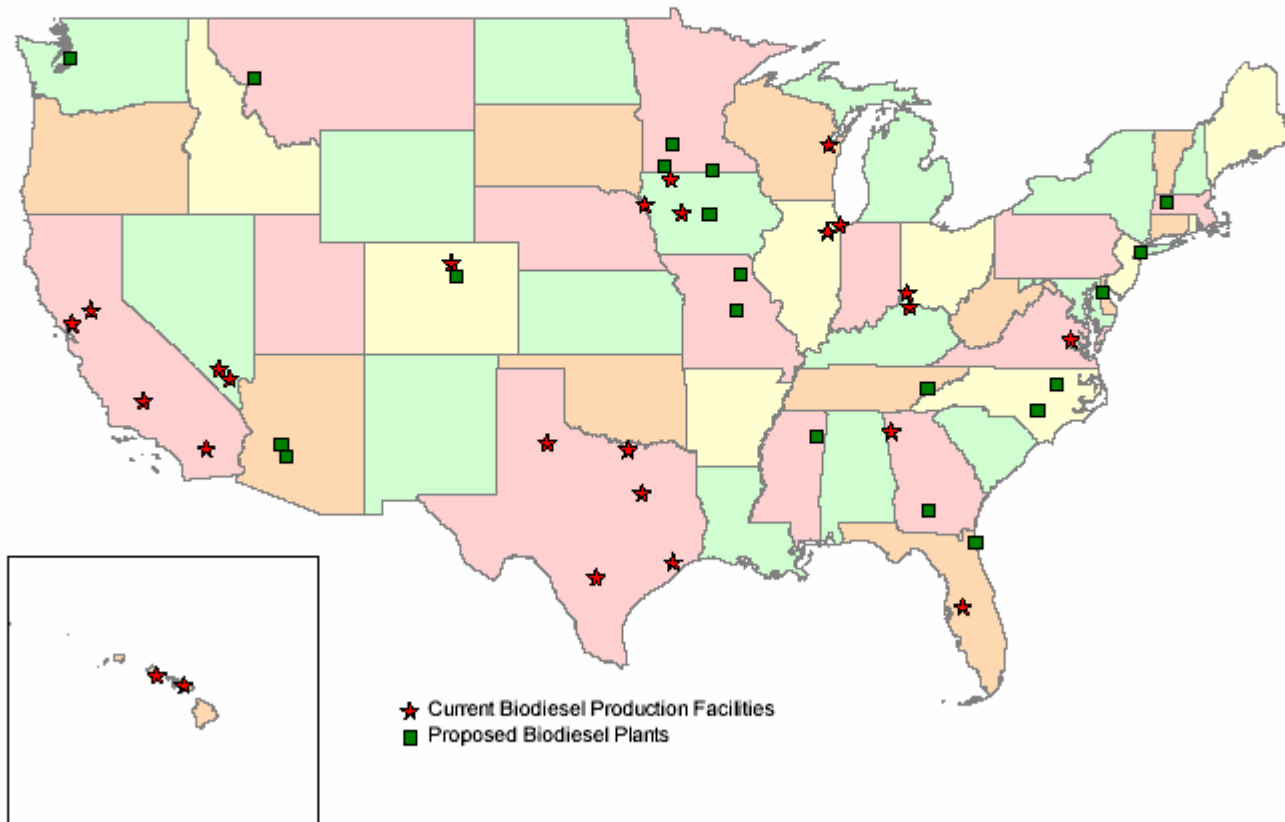
## Biodiesel Production *(in gallons)*



# Current and Potential Biodiesel Production

## Current and Proposed Biodiesel Production Plants

October, 2004





# Distributors – biodiesel.org

Biodiesel.org - Distributors - Microsoft Internet Explorer

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Address <http://www.biodiesel.org/buyingbiodiesel/distributors/>

The Official Site of the National Biodiesel Board

**BIODIESEL**  
TM by the National Biodiesel Board

[Resources](#)
[News](#)
[Market Segments](#)
[Buying Biodiesel](#)
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**Biodiesel Distributors**  
(as of April 6, 2005)

SEARCH WEBSITE:

[quick links](#)  
[Reports Database](#)  
[NBB Press Releases](#)  
[Fuel Fact Sheets](#)  
[Biodiesel Basics](#)  
[Members ONLY](#)

[E-mail](#)
[Print](#)
[Bookmark](#)

Click anywhere on the map below to find biodiesel distributors in the United States



• Alaska  
 • Hawaii

NOTE: These companies have submitted information regarding their fueling sites to the National Biodiesel Board. Failure to find a fueling site in your area does not necessarily mean biodiesel is not available in your area. Please refer to the biodiesel [Producers/Marketers List](#) in order to identify biodiesel availability in your area. We recommend that you contact several of the producers/marketers on the list - all of whom can supply biodiesel anywhere in the country.

The information contained within these databases is reliable to the best of our knowledge, but it is the user's responsibility to contact the individual company to verify any/all information. The National Biodiesel Board will not be held liable for any omissions or any inaccuracies, or for any consequences arising therefrom.

Internet

# Retail Locations – biodiesel.org

Biodiesel.org - Retail Fueling Sites - Microsoft Internet Explorer

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Address <http://www.biodiesel.org/buyingbiodiesel/retailfuelingsites/default.shtm>

**The Official Site of the National Biodiesel Board**

**BIODIESEL**

Resources News Market Segments Buying Biodiesel MultiMedia About NBB Contact NBB


**Retail Fueling Sites**  
(as of April 6, 2005)

SEARCH WEBSITE:

quick links  
 • Reports Database  
 • NBB Press Releases  
 • Fuel Fact Sheets  
 • Biodiesel Basics  
 • Members ONLY

E-mail Print Bookmark

Click anywhere on the map below to find biodiesel retail locations in the United States



Alaska  
Hawaii

VT NH MA RI CT NJ DE MD DC

**Maryland Biodiesel Rebate Form**

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# BIODIESEL MARKETS

- **B20** – EPACT, municipal, school buses
- **B100** – Niche markets: power generation, garbage truck fleets, California market
- **B2** – Lubricity component for Ag Fuels, premium diesel fuels, Renewable Fuel Standard





**US Dept of Defense - DLA**

**National Forest Service**

**US Department of Energy - Green Parks**

**US Postal Service**

**ODOT, IDOT, VDOT, MODOT, NJDOT etc...**

**Five Seasons Transit – Cedar Rapids**

**New Jersey Transit**

**General Services Administration**

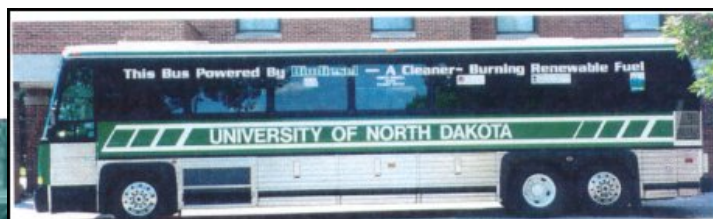
**Omaha Public Power District**

**Georgia Power**

**Commonwealth Edison**

**Deer Valley & Paradise Valley School  
Districts, Phoenix, AZ**

***MORE THAN 1,000 FLEETS***



# Indiana Biodiesel Markets

- City of Bloomington
- City of East Chicago
- Ball State University
- Purdue University
- Indiana University
- Local School Districts





# Biodiesel Excise Tax Credit & Other Policies Initiatives



# American Jobs Creation Act 2004

- Tax incentive for biodiesel blenders of 1¢ per percentage of biodiesel blended
  - ◆ Vegetable oils and animal fats
  - ◆ B20 = 20 ¢, B2 = 2 ¢
  - ◆ 1/2 ¢ for recycled oils
  - ◆ Must meet ASTM D 6751
- Highway Trust Fund is held harmless
- Effective January 1, 2005



# Biodiesel Tax Incentive

- Credit taken at the blender level
- Structured to benefit all consumers
  - ◆ taxable and tax exempt markets
- [www.biodiesel.org](http://www.biodiesel.org)
  - ◆ IRS preliminary guidance (updated August 4)
  - ◆ NBB tax credit issues brief (Q &A)
- Energy Bill extended the credit through 2008



# How will it affect price?

- DTN's Alt Fuels Index in August 2005: Indianapolis
  - ◆ No. 2 diesel: **\$1.73/gal.**
  - ◆ B20: **\$1.94/gal.**
  - ◆ The tax incentive could lower the price of B20 by 20 cents
  - ◆ B20: **\$1.74/gal.**

- **There will be variables** that determine the cost differential, including the price of oil, but the tax incentive will help close the gap.

\*prices do not include taxes



# Biodiesel Resource

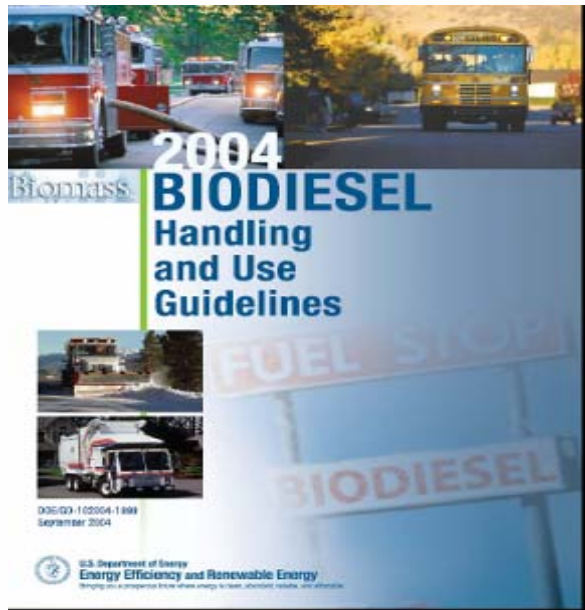
## ☐ **National Biodiesel Board (NBB)**

- ✓ Informational and technical resources, reports database
- ✓ [www.biodiesel.org](http://www.biodiesel.org)
- ✓ 800/841-5849





# Other Educational Resources



<http://www.nrel.gov/docs/fy05osti/36182.pdf>

Biodiesel.org





[www.biodieselconference.org](http://www.biodieselconference.org)

SAVE THE DATE!  
**NATIONAL  
BIODIESEL  
CONFERENCE  
& EXPO 2006**



SAN DIEGO CONVENTION CENTER | OMNI SAN DIEGO HOTEL  
FEBRUARY 5-8, 2006 | SAN DIEGO, CALIFORNIA

